

7.4

CHECK YOUR Understanding

- What is an electron shell?
- In the first three rows of the Periodic Table, what is the maximum number of electrons that can occupy the first shell? What is the maximum number of electrons that can occupy the second shell and third shell?
- Consider an atom of oxygen.
 - How many electrons are in the first shell?
 - How many electrons are in the second shell?
 - How many electrons are in the third shell?
- Consider an atom of nitrogen.
 - How many electrons are in the first shell?
 - How many electrons are in the second shell?
 - How many electrons are in the third shell?
- When an atom forms an ion, describe the outer shell of the ion.
- Draw a Bohr diagram for each of the following atoms:
 - nitrogen
 - boron
 - neon
 - potassium
- Draw a Bohr diagram for each of the following ions:
 - sodium
 - sulfur
 - carbon
- Do noble gases such as helium and neon normally form ions? Explain.
- Consider the first three rows of the Periodic Table. State the column (or group) that has an element with
 - one outer electron
 - two outer electrons
 - three outer electrons
 - four outer electrons
 - five outer electrons
 - six outer electrons
 - seven outer electrons
 - eight outer electrons

- Draw a Bohr diagram for the ions of the compound sodium chloride.
- Refer to the two Bohr diagrams (Figures 11 and 12) below.
 - What is the number of protons in each atom or ion?
 - What is the number of electrons in each atom or ion?
 - Which element does each diagram represent?
 - Is each diagram an atom or an ion?



Figure 11



Figure 12

- If a new element that has seven outer electrons is discovered, in which column or group do you think it should be placed?
- If a new element that has two outer electrons is discovered, in which column or group do you think it should be placed?
- Describe the process by which aluminum sulfide is formed from atoms of aluminum and sulfur. How many atoms of each element are required? How many electrons are transferred? Which atoms give up electrons, and which atoms accept electrons?
- Sodium is stored in oil to keep it away from water. Magnesium has fewer special storage requirements. Explain why sodium is so much more reactive than magnesium.
- Describe a situation that could be used as an analogy to explain the formation of ions in ionic compounds.
- Does sodium chloride (an ionic compound) exist as molecules? Explain why or why not.